## AMENDMENTS OT THE CLAIMS

1. (Presently Amended) A bridge deck comprising:

a plurality of concrete slabs in space relation, each concrete slab constructed of a conductive concrete mixture, said mixture including cement; aggregate; water; and conductive materials, wherein said conductive materials include metal fibers and metal particles; and

a plurality of electrodes embedded in said conductive concrete mixture at spaced locations, each of said electrodes comprising parallel plate portions and an intermediate section, said parallel plate portions and said intermediate section forming a void therebetween through which said conductive concrete mixture may flow.

2. (Original) The mixture of claim 1 wherein said metal fibers comprise 1-3% of the total volume of conductive concrete mixture and said metal particles comprise 5-40% of the total volume of conductive concrete mixture.

3. (Original) The mixture of claim 2 wherein said metal fibers comprise 1-2% of the total volume of conductive concrete mixture and said metal particles comprise 10-30% of the total volume of conductive concrete mixture.

4. (Original) The mixture of claim 3 wherein said metal fibers comprise 1.5% of the total volume of conductive concrete mixture and said metal particles comprise 20% of the total volume of conductive concrete mixture.

5. (Cancel)

6. (Presently Amended) The mixture of claim ~~4~~5 wherein said electrodes are spaced four to six feet apart.

7. (Original) A method of making conductive concrete comprising: loading coarse aggregate onto a conveyer; loading metal particles onto said conveyer; thereafter

placing metal fibers onto said conveyer wherein the contents of said conveyer then are emptied into a container containing cement in water; and mixing said coarse aggregate, metal particles, metal fibers and cement in water in said container.

8. (Presently Amended) A heating system for a bridge deck comprising:

a photovoltaic cell;

an energy storage device electrically coupled to said photovoltaic cell; ~~and~~

conductive concrete forming at least a portion of the bridge deck and being electrically coupled to said energy storage device; wherein said conductive concrete includes metal fibers and metal particles; and

a plurality of electrodes embedded in said conductive concrete and coupled to said energy storage device, each of said electrodes comprising parallel plate portions and an intermediate section, said parallel plate portions and said intermediate section forming a void therebetween through which said conductive concrete mixture may flow.

9. (Original) The heating system of claim 8 wherein said energy storage device is a bank of one or more batteries.

10. (Presently Amended ) The heating system of claim 9 wherein said power system further comprises an inverter and a step-up transformer, said inverter electrically coupled between said energy storage device and said transformer, said transformer electrically coupled between said inverter and said electrodes.

11-13. (Previously Cancelled)

14. (Original) Electrodes for use in a conductive concrete bridge deck system comprising: two parallel plate portions; and at least one intermediate section, said parallel plate portions and said intermediate section forming at least one void therebetween through

which conductive concrete may flow; wherein said electrodes are embedded in the conductive concrete at spaced locations.

15. (Original) The electrodes of claim 14 wherein said parallel plate portions and said intermediate section are formed as part of a single metal plate.

16. (Original) The electrodes of claim 15 wherein said intermediate sections are formed by attaching elongated rod structures to said parallel plate portions at spaced locations.

17. (Original) The electrodes of claim 16 wherein said parallel plate portions are formed from corrugated metal.

18. (Presently Amended) A heating system for a bridge deck comprising:

a plurality of concrete slabs in spaced relation, each concrete slab including a first layer;

a second layer made of an electrically conductive material situated atop said first layer; ~~and means for applying an electrical current to said second layer; wherein~~ said second layer comprisinges a cementitious composite admixed with ~~a plurality of electrically conductive components; and wherein said electrically conductive components are~~ metal particles and metal fibers;

a plurality of electrodes embedded in said second layer, each of said electrodes comprising parallel plate portions and an intermediate section, said parallel plate portions and said intermediate section forming a void therebetween through which said conductive concrete may flow; and

means for applying an electric current to said electrodes.

19. (Original) The heating system of claim 18 wherein said means to apply an electrical current comprises a power source capable of applying an electrical current to

a planar surface of said second layer sufficient to heat said planar surface to a temperature greater than 0°C.

20. (Original) The heating system of claim 19 wherein said means to apply an electrical current comprises a power source capable of applying an average electrical power of 500-600 $W/m^2$ to said electrically conductive material.

21. (Original) The heating system of claim 19 wherein said power source is a direct current power source.

22. (Presently Amended) The heating system of claim 19 wherein said power source is an alternatinge current power source.

23. (Original) The heating system of claim 19 wherein said power source is a photovoltaic power source.

24. (Original) The heating system of claim 20 wherein said power source is a direct current power source.

25. (Original) The heating system of claim 20 wherein said power source is an alternate current power source.

26. (Original) The heating system of claim 20 wherein said power source is a photovoltaic power source.

27. (Presently Amended) A heating system for a bridge deck comprising:

a first layer;

a second layer made of an electrically conductive material situated atop said first layer;

a thermal insulating layer disposed between said first layer and said second layer;

a plurality of electrodes embedded in said second layer, each of said electrodes comprising parallel plate portions and an intermediate section, said parallel plate portions and

said intermediate section forming a void therebetween through which said conductive concrete may flow; and

means for applying an electrical current to said electrodes ~~second layer~~.

28. (Original) The heating system of claim 27 wherein said second layer comprises a cementitious composite admixed with a plurality of electrically conductive components.

29. (Original) The heating system of claim 28 wherein said plurality of electrically conductive components are metal particles and metal fibers.

30. (Original) The heating system of claim 29 wherein said means to apply an electrical current comprises a power source capable of applying an electrical current to a planar surface of said second layer sufficient to heat said planar surface to a temperature greater than 0°C.

31. (Original) The heating system of claim 30 wherein said means to apply an electrical current comprises a power source capable of applying an average electrical power of 500-600 $W/m^2$ to said electrically conductive material.

32. (Original) The heating system of claim 30 wherein said power source is a direct current power source.

33. (Original) The heating system of claim 30 wherein said power source is an alternate current power source.

34. (Original) The heating system of claim 30 wherein said power source is a photovoltaic power source.

35. (Original) The heating system of claim 31 wherein said power source is a direct current power source.

36. (Original) The heating system of claim 31 wherein said power source is an alternate current power source.

37. (Original) The heating system of claim 31 wherein said power source is a photovoltaic power source.

38. (Original) A system to melt ice and snow accumulation from a bridge deck comprising: a first layer; a second layer made of an electrically conductive material situated atop said first layer; and means for applying a radio frequency across said second layer sufficient to create microwave heating of said ice and snow accumulation atop said second layer, the bridge sides and said second layer constituting a lossy resonator to thereby focus heat on said accumulation.

39. (Original) The system of claim 38 wherein a thermal insulating layer is applied between said first layer and said second layer.

40. (Presently Amended) A method to apply a conductive concrete surface capable of melting ice and snow accumulation from the surface thereof, comprising:

applying a layer of electrically conductive material on top of an existing layer; ~~and applying means whereby an electrical current can be applied to said layer of electrically conductive material, wherein~~ said ~~layer of~~ electrically conductive material comprisinges a cementitious composite admixed ~~with a plurality of electrically conductive components, and wherein said electrically conductive components include~~ metal fibers and metal particles;

embedding a plurality of electrodes in said layer of electrically conductive material, each of said electrodes comprising parallel plate portions and an intermediate section, said parallel plate portions and said intermediate section forming a void therebetween through which said material may flow; and

attaching to said electrodes means for providing electrical current to said electrodes.

41. (Original) The method of claim 40 wherein a thermal insulation layer is applied between said existing layer and said layer of electrically conductive material.

42. (Presently Amended) A method to apply a conductive concrete surface capable of melting ice and snow accumulation from the surface thereof, comprising: applying a layer of electrically conductive material on top of an existing layer; and applying means whereby a radio frequency can be directed to said electrically conductive material, the bridge sides and said second layer constituting a lossy resonator to thereby focus heat on said accumulation.

43. (Original) The method of claim 42 wherein a thermal insulation layer is applied between said existing layer and said layer of electrically conductive material.

44. (Original) The method of claim 43 wherein said electrically conductive material comprises a cementitious composite admixed with a plurality of electrically conductive components.

45. (Original) An insulating material, comprising: between 50 to 99 percent mortar by volume; and between 1 to 50 percent sawdust by volume.